(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
10 July 2003 (10.07.2003)

PCT

(10) International Publication Number
WO 03/055585 A1

(51) International Patent Classification[7]: B01J 8/02

(21) International Application Number: PCT/AU03/00022

(22) International Filing Date: 3 January 2003 (03.01.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PR 9817 4 January 2002 (04.01.2002) AU

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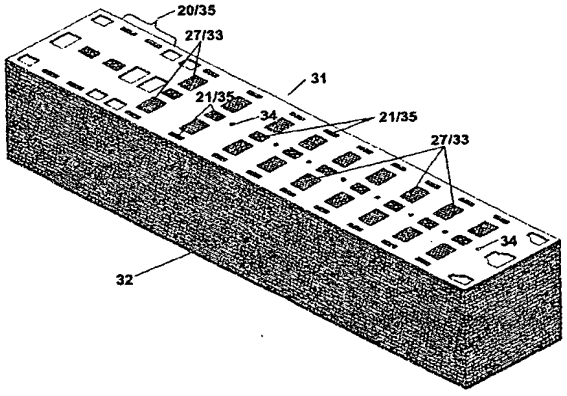
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CHEMICAL REACTOR



(57) Abstract: A chemical reactor is disclosed and which has a core composed of a stack of metal plates that are diffusion bonded in face-to-face relationship. A plurality of reaction zones are located within the core, as are a plurality of catalyst receiving zones, and both the reaction zones and the catalyst receiving zones are defined by respective aligned apertures in the plates. A first channel arrangement is provided in some of the plates for transporting a first reactant to and between the reaction zones, portions of the first channel arrangement that interconnect the reaction zones being formed over at least a portion of their length as heat exchange channels. A second channel arrangement is provided in others of the plates and is arranged to deliver a second reactant to each of the reaction zones. Also, a third channel arrangement provided in still others of the plates for transporting a third reactant to and between the catalyst receiving zones, portions of the third channel arrangement that interconnect the catalyst receiving zones being formed over at least a portion of their length as heat exchange channels that are positioned in heat exchange proximity to the heat exchange channels of the first channel arrangement. Also disclosed is a fuel processor that incorporates the chemical reactor, the catalyst receiving zones being arranged to function as reformer stages in the fuel processor.

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